

PENYELESAIAN LENGKAP

SET 2

KERTAS 1

1 D $3(8-9) + \frac{1}{2} \div 2.5$
 $= 3(-1) + 0.2$
 $= -2.8$

2 C

3 B $\frac{4^0 \times 1^4}{2^2}$
 $= \frac{1}{2^2}$
 $= 2^{-2}$

4 A

5 C

6 B $4301_5 = 4(5^3) + 3(5^2) + 1(5^0)$
 $= 576$
 Harga baharu/New price
 $= \text{RM}576 \times 1.5$
 $= \text{RM}864$
 Keuntungan/Profit
 $= \text{RM}864 - \text{RM}576$
 $= \text{RM}288$

Baki/Remainder

$$\begin{array}{r|l} 4 & 288 \\ & 72 \text{ — } 0 \\ 4 & 18 \text{ — } 0 \\ 4 & 4 \text{ — } 2 \\ 4 & 1 \text{ — } 0 \\ & 0 \text{ — } 1 \end{array}$$

$$288 = 10200_4$$

7 B Wang pendahuluan
 Down payment
 $= \text{RM}48\,000 \times 0.1 - \text{RM}5\,000$
 $= \text{RM}43\,000$
 Simpanan bulanan
 Monthly savings
 $= \frac{\text{RM}43\,000}{12}$
 $= \text{RM}3\,583.33$

8 D Katakan kadar cukai pintu bagi bandar R ialah x .
 Let the property assessment tax rate for town R be x .
 $1 : 1.2 = 6\% : x$
 $\frac{1}{1.2} = \frac{6\%}{x}$
 $x = 7.2\%$

Cukai pintu
 Property assessment tax
 $= \text{Nilai tahunan} \times \text{Kadar cukai pintu}$
 $\text{Annual value} \times \text{Property assessment tax rate}$
 $= \text{RM}800 \times 12 \times 7.2\%$
 $= \text{RM}691.20$

9 A Premium kadar/Gross premium
 $= \text{RM}220 \times 0.45$
 $= \text{RM}99$

10 A $(2x-y)(3y-2x)$
 $= 6xy - 4x^2 - 3y^2 + 2xy$
 $= -4x^2 - 3y^2 + 8xy$

11 C $V = \frac{4}{3}\pi r^3$
 $r^3 = \frac{3V}{4\pi}$
 $r = \sqrt[3]{\frac{3V}{4\pi}}$

12 A $OB = 2OA$
 Kecerunan/Gradient $= -\frac{OA}{OB}$
 $= -\frac{1}{2}$
 $y = -\frac{x}{2} + c$

Di/At (1, 2),

$$2 = -\frac{1}{2} + c$$

$$c = \frac{5}{2}$$

$$y = -\frac{x}{2} + \frac{5}{2}$$

$$2y = -x + 5$$

13 A $y = 2x^2 - 6x - 8$
 Nilai $a = 2 > 0$, bentuk $\cup$
 Value of $a = 2 > 0$, shape $\cup$
 Apabila/When $y = 0$,
 $2x^2 - 6x - 8 = 0$
 $2(x+1)(x-4) = 0$
 $x = -1$ atau/or $x = 4$
 Pintasan- x /x-intercept $= -1$ dan/and 4
 Nilai $c = 8$, pintasan- $y = 8$
 Value of $c = 8$, y-intercept $= 8$

14 A

15 C

16 D $0.5(90 + 35)t = 80$
 $125t = 160$
 $t = 1.28$

17 A $p \propto \frac{1}{\sqrt{q}}$
 $p = \frac{k}{\sqrt{q}}$
 $2 = \frac{k}{\sqrt{4}}$
 $k = 4$

$$p = \frac{4}{\sqrt{q}}$$

18 B $I \propto rt$
 $I = krt$
 $500 = k(0.05)(2)$
 $k = 5\,000$

$$I = 5000rt$$

$$2800 = 5000r(5)$$

$$r = 0.112$$

19 B

$$t \propto \frac{V}{j^2}$$

$$t = \frac{kV}{j^2}$$

$$12 = \frac{300k}{15}$$

$$k = \frac{3}{5}$$

$$t = \frac{3V}{5j^2}$$

$$18 = \frac{3(2500)}{5j^2}$$

$$j^2 = 83.33$$

$$j = 9.13$$

20 C

$$A - \begin{bmatrix} 3 & -6 \\ 2 & 1 \end{bmatrix} = \begin{bmatrix} 11 & 7 \\ 12 & 6 \end{bmatrix}$$

$$A = \begin{bmatrix} 11 & 7 \\ 12 & 6 \end{bmatrix} + \begin{bmatrix} 3 & -6 \\ 2 & 1 \end{bmatrix}$$

$$A = \begin{bmatrix} 14 & 1 \\ 14 & 7 \end{bmatrix}$$

21 B

$$2p = 6$$

$$p = 3$$

$$5p - q = 7$$

$$q = 8$$

$$p + qr = pr - 2$$

$$3 + 8r = 3r - 2$$

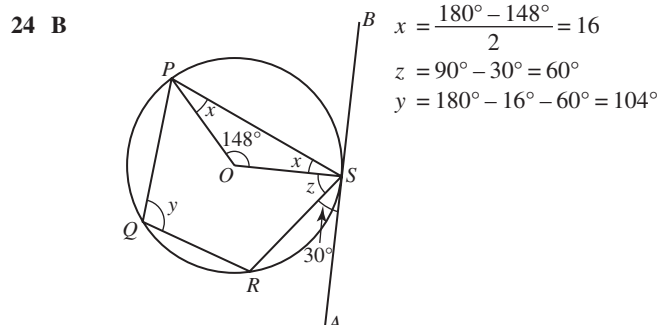
$$5r = -5$$

$$r = -1$$

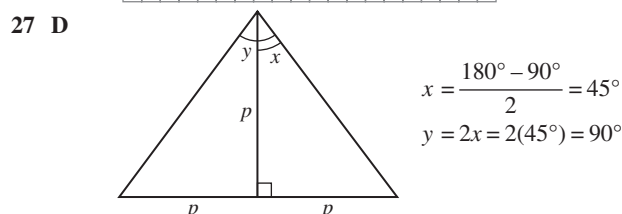
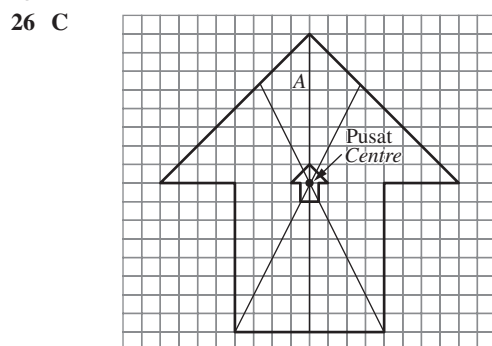
22 A

23 B

$$7 \times 2 \times 9 + \frac{7(2)(6)}{3} = 154 \text{ cm}^3$$



25 A



28 A

29 A

$$(a + b)^2 = a^2 + 2ab + b^2$$

30 B

31 C

32 D

$$n(X) + n(Y) - n(X \cap Y) + 3 = n(\xi)$$

$$28 + 66 - n(X \cap Y) + 3 = 90$$

$$n(X \cap Y) = 7$$

33 C

Masa/Time

$$= 5.4 + 4.7$$

$$= 10.1 \text{ jam/hours}$$

$$= 10 \text{ jam dan } 6 \text{ minit/10 hours and 6 minutes}$$

34 D

$$\frac{8.25}{2.38 + 8.25 + 6.79} \times 360^\circ = 170.49^\circ$$

35 A

Skor Score	6	7	8	9	10
Kekerapan Frequency	5	9	8	6	2
Kekerapan longgokan Cumulative frequency	5	14	22	28	30

$$Q_1 = \text{cerapan ke-} \left(\frac{1}{4} \times 30 \right)$$

$$\left(\frac{1}{4} \times 30 \right)^{\text{th}} \text{ observation}$$

$$= \text{cerapan ke-} 7.5$$

$$7.5^{\text{th}} \text{ observation}$$

$$= \frac{7+7}{2}$$

$$= 7$$

$$Q_3 = \text{cerapan ke-} \left(\frac{3}{4} \times 30 \right)$$

$$\left(\frac{3}{4} \times 30 \right)^{\text{th}} \text{ observation}$$

$$= \text{cerapan ke-} 22.5$$

$$22.5^{\text{th}} \text{ observation}$$

$$= \frac{8+9}{4}$$

$$= 8.5$$

$$\text{Julat antara kuartil/Interquartile range}$$

$$= 8.5 - 7$$

$$= 1.5$$

36 A

Kebarangkalian

Probability

$$= \frac{2+3}{2+3+5}$$

$$= \frac{5}{10}$$

$$= \frac{1}{2}$$

37 D

38 A

$$3y + y - 1 + y + 6 = 50$$

$$5y + 5 = 50$$

$$5y = 45$$

$$y = 9$$

Bilangan peserta yang mengambil bahagian dalam kedua-dua kuiz = 8

Number of participants who took part in both quizzes = 8

Kebarangkalian

Probability

$$= \frac{8}{50}$$

$$= \frac{4}{25}$$

- 39 A 68 72 78 80 82 99
Median

$$= \frac{78 + 80}{2}$$

$$= 79$$

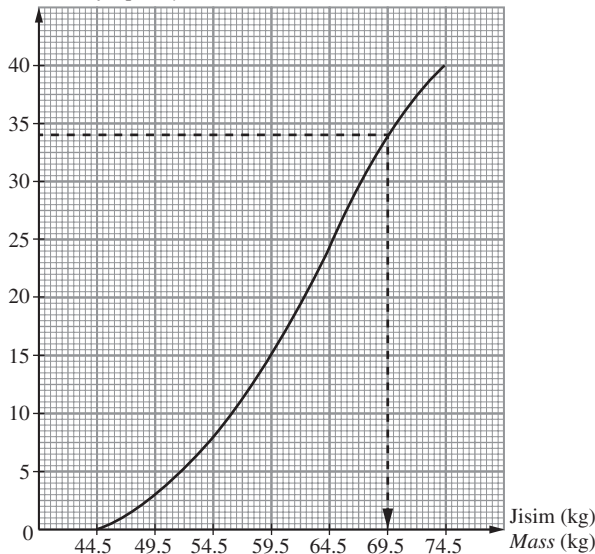
$$Q_1 = 72$$

$$Q_3 = 82$$

- 40 C 40% daripada jumlah kekerapan
40% from the total frequencies
 $= 0.85 \times 40$
 $= 34$

Daripada ogif/From the ogive, $P_{85} = 69.5$

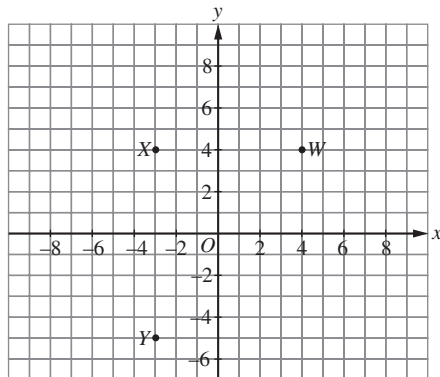
Kekerapan longgokan
Cumulative frequency



KERTAS 2

Bahagian A

1 (a)



- (b) $WY = \sqrt{9^2 + 7^2}$
 $= 11.40 \text{ unit/units}$

2 (a) Julat/Range

$$= 18 - 6$$

$$= 12$$

(b) Median = 12

$$Q_1 = 7$$

$$Q_3 = 15$$

Julat antara kuartil/Interquartile range

$$= 15 - 7$$

$$= 8$$

3 (a) Jika $12^0 \neq 1$, maka $12^0 x \neq x$.

If $12^0 \neq 1$, then $12^0 x \neq x$.

Benar/True

(b) $3n^3 - 7$, di mana $n = 0, 1, 2, 3, \dots$

$3n^3 - 7$, where $n = 0, 1, 2, 3, \dots$

4 (a) Boleh dicapai/Attainable

(b) Aliran tunai/Cash flow

= Jumlah pendapatan – Jumlah perbelanjaan – Simpanan

Total income – Total expenses – Savings

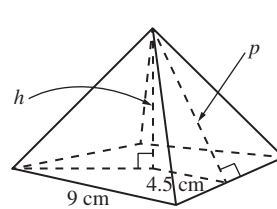
$$= \text{RM } 7\,800 + \text{RM } 1\,600 - (\text{RM } 1\,500 + \text{RM } 600 + \text{RM } 900 + \text{RM } 200 + \text{RM } 300 + \text{RM } 250) - 0.2 \times \text{RM } 7\,800$$

$$= \text{RM } 4\,090$$

5 Kuasa dua sempuran antara 80 dan 100 ialah 81.

Perfect square between 80 and 100 is 81.

$$AB = BC = 9 \text{ cm}$$



Isi padu geometri = 270 cm^3

Volume of geometry = 270 cm^3

$$\frac{1}{3} \times 81 \times h = 270$$

$$h = 10 \text{ cm}$$

$$p = \sqrt{4.5^2 + 10^2} = 10.97 \text{ cm}$$

6 (a) Bayaran ditanggung oleh Encik Halim

Amount borne by Encik Halim

$$= (\text{RM } 48\,000 - \text{RM } 3\,500) \times 0.2 + \text{RM } 3\,500$$

$$= \text{RM } 12\,400$$

Bayaran pampasan diterima

Amount of compensation

$$= (\text{RM } 48\,000 - \text{RM } 3\,500) \times 0.8$$

$$= \text{RM } 35\,600$$

(b) RM 0

7 Luas pentas/Area of stage = $\frac{22}{7} \text{ m}^2$

$$\pi x^2 = \frac{22}{7}$$

$$x^2 = 1$$

$x = -1$ (ditolak/rejected) atau/or $x = 1$

Biarkan titik tengah bagi AF ialah M.

Let the midpoint of AF be M.

$$AM = \frac{AF}{2} = \frac{x+3}{2}$$

$$\tan 60^\circ = \frac{OM}{AM}$$

$$OM = \frac{\sqrt{3}}{2} (x+3)$$

Luas dewan majlis

Area of the hall

$$= 6 \times \text{Luas } \triangle OAF$$

$$6 \times \text{Area of } \triangle OAF$$

$$= 6 \times \frac{1}{2} (x+3) \left[\frac{\sqrt{3}}{2} (x+3) \right]$$

$$= \frac{3}{2} \sqrt{3} (x+3)^2$$

$$= \frac{3}{2} \sqrt{3} (1+3)^2$$

$$= 41.57 \text{ m}^2$$

8 Katakan x dan y masing-masing mewakili harga sehelai tuala dan sehelai kain.

Let x and y represent the prices of a piece of towel and a cloth respectively.

$$2(2x + 3y) = 213$$

$$4x + 6y = 213$$

$$3(3x + 2y) = 460.50$$

$$9x + 6y = 460.50$$

$$\begin{bmatrix} 4 & 6 \\ 9 & 6 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 213 \\ 460.5 \end{bmatrix}$$

$$\begin{bmatrix} x \\ y \end{bmatrix} = \frac{1}{4(6) - 6(9)} \begin{bmatrix} 6 & -6 \\ -9 & 4 \end{bmatrix} \begin{bmatrix} 213 \\ 460.5 \end{bmatrix}$$

$$\begin{bmatrix} x \\ y \end{bmatrix} = -\frac{1}{30} \begin{bmatrix} -1485 \\ -75 \end{bmatrix}$$

$$\begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 49.5 \\ 2.5 \end{bmatrix}$$

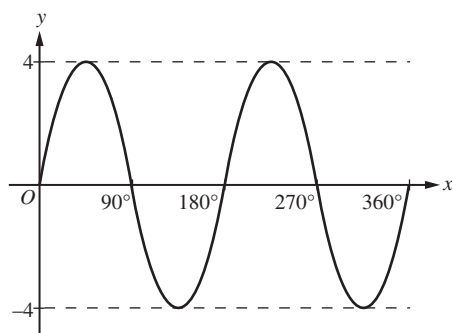
Maka, harga sehelai tuala dan sehelai kain masing-masing ialah RM 49.50 dan RM 2.50.

Thus, the price of a piece of towel and a piece of cloth are RM 49.50 and RM 2.50 respectively.

- 9 (a) (i) (2, 5)
(ii) Q ialah putaran 90° lawan jam pada pusat (4, 3).
Q is a 90° anticlockwise rotation at centre (4, 3).
Atau/or
Q ialah putaran 90° ikut jam pada pusat (0, 3).
Q is a 90° clockwise rotation at centre (0, 3).

(b) Translasi $\begin{pmatrix} 7 \\ 3 \end{pmatrix}$ / Translation $\begin{pmatrix} 7 \\ 3 \end{pmatrix}$

10 (a)



(b) (i) $MP = \frac{QR}{2} = \frac{18}{2} = 9 \text{ cm}$

$$TP = 2PM = 2(9) = 18 \text{ cm}$$

$$TM = \sqrt{18^2 - 9^2} = 15.59 \text{ cm}$$

(ii) $\tan x = -\tan(180^\circ - x)$

$$= -\frac{TM}{MP} = -\frac{15.59}{9} = -1.732$$

Bahagian B

11 (a) (i) $8y - 5x = 40$
 $8y = 5x + 40$
 $y = \frac{5}{8}x + 5$

Kecerunan/Gradient = $\frac{5}{8}$

(ii) $y = \frac{5}{8}x + 5$

Di paksi-x/At x-axis, $y = 0$.

$$\frac{5}{8}x + 5 = 0$$

$$x = -8$$

- (b) (i) Katakan koordinat rumah Farid ialah $(-11, y)$ dan koordinat syarikatnya ialah $(0, 4)$.

Let the coordinates of Farid's house are $(-11, y)$ and the coordinates of his company are $(0, 4)$.

$$\sqrt{[0 - (-11)]^2 + (4 - y)^2} = 61$$

$$\sqrt{121 + (4 - y)^2} = 61$$

$$121 + (4 - y)^2 = 61^2$$

$$(4 - y)^2 = 3600$$

$$4 - y = \pm 60$$

$$y = -56 \text{ (ditolak/rejected) atau/or } y = 64$$

Koordinat rumah Farid ialah $(-11, 64)$.

The coordinates of Farid's house are $(-11, 64)$.

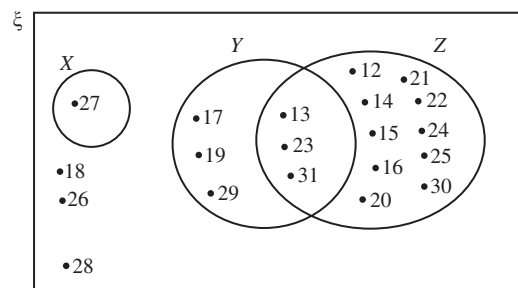
(ii) $y = \frac{64 - 4}{-11 - 0}x + 4$
 $y = -\frac{60}{11}x + 4$

12 (a) (i) $X = \{27\}$

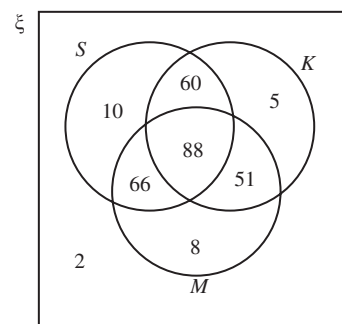
$$Y = \{13, 17, 19, 23, 29, 31\}$$

(ii) $\xi = \{12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31\}$

$$Z = \{12, 13, 14, 15, 16, 20, 21, 22, 23, 24, 25, 30, 31\}$$



(b) (i)



(ii) $66 + 60 + 51 + 88 = 265$

(iii) $2 + 10 + 60 + 5 + 88 = 165$

13 (a) (i) $m = 330 - 7 - 30 - 65 - 98 = 130$

Markah Mark	Kekerapan Longgokan Cumulative Frequency
41 – 50	7
51 – 60	37
61 – 70	102
71 – 80	232
81 – 90	330

(ii)

Markah Mark	Kekerapan, f Frequency, f	x	x ²	fx ²
41 – 50	7	45.5	2070.25	14491.75
51 – 60	30	55.5	3080.25	92407.5
61 – 70	65	65.5	4290.25	278866.25
71 – 80	130	75.5	5700.25	741032.5
81 – 90	98	85.5	7310.25	716404.5
	$\Sigma f = 330$			$\Sigma fx^2 = 1843202.5$

Sishan piawai

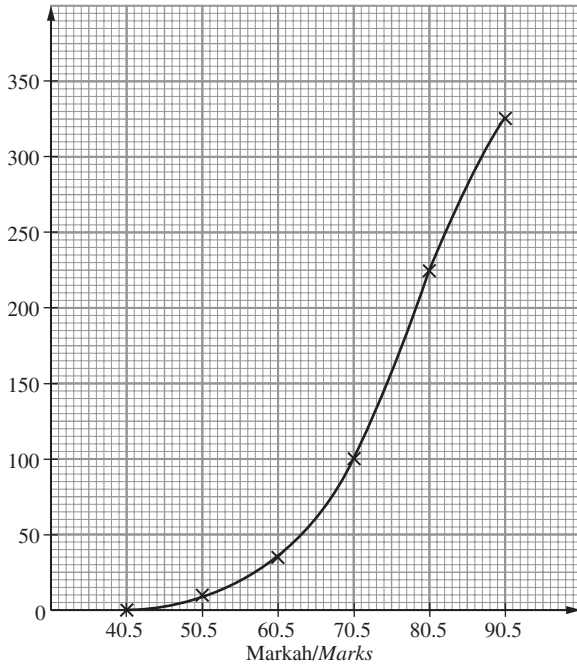
Standard Deviation

$$= \sqrt{\frac{1843202.5}{330} - 74.05^2}$$

$$= 10.10$$

(b) (i)

Kekerapan longgokan
Cumulative frequency

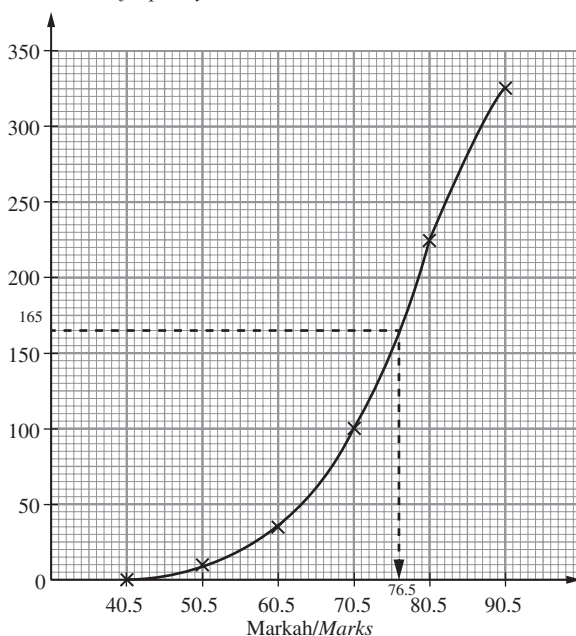


(ii) Kedudukan Q_2 / Position of Q_2

$$= \frac{330}{2}$$

$$= 165$$

Kekerapan longgokan
Cumulative frequency

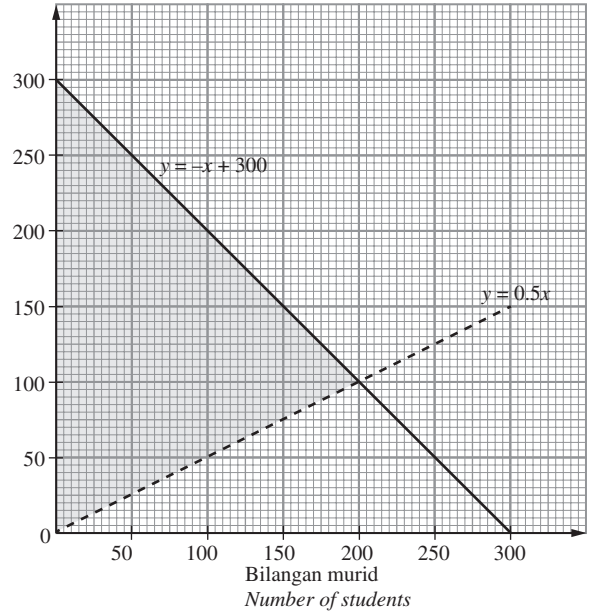


$$Q_2 = 76.5$$

- 14 (a) $x + y \leq 300$
 $x < 2y$

(b)

Bilangan orang dewasa
Number of adults



(c) (i) 199

(ii) 150 orang murid dan 70 orang dewasa tidak dapat memuaskan situasi yang dibagi sebab titik (150, 70) tidak berada dalam kawasan berlorek.

150 students and 70 adults does not fulfill the condition given because point (150, 70) is not within the shaded region.

15 (a) Jumlah pendapatan tahunan / Total annual income

$$= \text{RM}126\,800 - \text{RM}10\,500$$

$$= \text{RM}116\,300$$

Pendapatan bercukai

Chargeable income

= Jumlah pendapatan tahunan – Pengecualian cukai – Pelepasan cukai

Total annual income – Tax exemption – Tax relief

$$= \text{RM}116\,300 - \text{RM}3\,000 - (\text{RM}9\,000 + \text{RM}5\,600 + \text{RM}2\,500)$$

$$= \text{RM}96\,200$$

(b) Cukai pendapatan yang perlu dibayar / Income tax payable

$$= \text{RM}3\,700 + 0.19(\text{RM}26\,200) - \text{RM}1\,200$$

$$= \text{RM}7\,478$$

(c) (i) Jumlah PCB / Total PCB

$$= \text{RM}700 \times 12 = \text{RM}8\,400$$

Encik Fouzi tidak perlu membuat bayaran tambahan cukai pendapatan. Lebihan potongan PCB sebanyak $\text{RM}8\,400 - \text{RM}7\,478 = \text{RM}922$ akan dipulangkan oleh Lembaga Hasil Dalam Negeri ke dalam akaun bank Encik Fouzi.

Mr Fouzi does not need to make any additional income tax payment. Excess deduction of PCB of $\text{RM}8\,400 - \text{RM}7\,478 = \text{RM}922$ will be refunded by the Inland Revenue Board to Mr Fouzi's bank account.

(ii) Rebat cukai sebanyak RM400 untuk pembayar cukai sekiranya pendapatan bercukai tidak melebihi RM35 000.

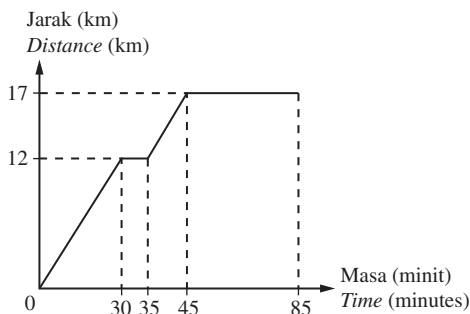
Tax rebate of RM400 for taxpayer with chargeable income not exceeding RM35 000.

Bahagian C

16 (a) (i) $22 : 11 = 2 : 1$

(ii) $100(1.5) + 3y = 420$
 $3y = 420 - 150$
 $y = 90$

(b) (i)



(ii) Laju/Speed

$$= \frac{17 - 12}{45 - 35}$$

$$= 0.5 \text{ km min}^{-1}$$

(c) Purata/Average

$$= \frac{40 + 45 + 45 + 45 + 50 + 50 + 50 + 50 +}{53 + 55 + 55 + 60 + 65 + 70}$$

$$= 52.36$$

Perniagaan Kafe Salmah tidak mempunyai pretasi yang baik sebab bilangan purata pelanggan hanya 52.36 sehari, iaitu kurang daripada 55 orang pelanggan seperti yang diberi dalam pernyataan tersebut.

The business of Salmah Cafe is not performing well because the average number of customers per day is only 52.36, which is lower than 55 customers as given in the statement.

(d) Bilangan baucar RM100

Number of vouchers worth RM100

$$= 200 \times \frac{1}{20 + 4 + 1}$$

$$= 8$$

Kebarangkalian mendapat baucar bernilai RM100

Probability of getting voucher worth RM100

$$= \frac{1}{8} \times \frac{8}{200}$$

$$= \frac{1}{200}$$

Bilangan pemenang yang dijangka memenangi baucar RM100

Expected number of winners who win RM100 vouchers

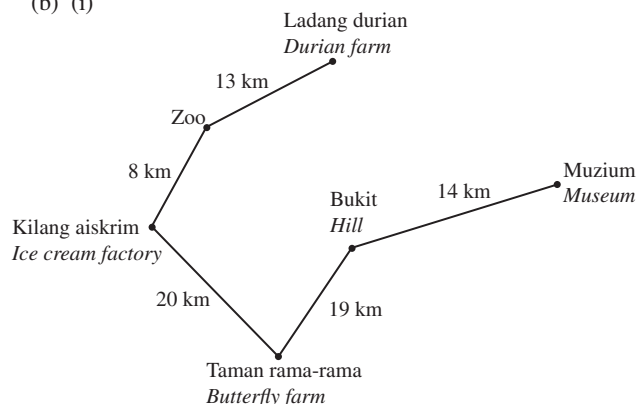
$$= 1200 \times \frac{1}{200}$$

$$= 6$$

17 (a) (i) $60 \left(1.2 - \frac{2}{3} \right) = 32 \text{ min}$

(ii) $0.5(100 + 60) \left(\frac{2}{3} \right) + 0.5(2 - 1.2)(60) = 77.33 \text{ km}$

(b) (i)



(ii) Laju seragam = $\frac{\text{Jumlah jarak}}{\text{Jumlah masa}}$

$$\text{Uniform speed} = \frac{\text{Total distance}}{\text{Total time}}$$

$$50 = \frac{14 + 19 + 20 + 8 + 13}{t}$$

$$t = 1.48 \text{ jam/hours}$$

$$= 5 \text{ 328 s}$$

(c) Luas sekeping pizza dari kedai A

Area of a slice of pizza from shop A

$$= \frac{90^\circ}{360^\circ} \times \frac{22}{7} \times 9^2$$

$$= 63.64 \text{ cm}^2$$

Harga 1 cm² / Price of 1 cm²

$$= \frac{\text{RM5}}{63.64 \text{ cm}^2}$$

$$\approx \text{RM0.08/cm}^2$$

Luas sekeping pizza dari kedai B

Area of a slice of pizza from shop B

$$= \frac{30^\circ}{360^\circ} \times \frac{22}{7} \times 10^2$$

$$= 26.19 \text{ cm}^2$$

Harga 1 cm² / Price of 1 cm²

$$= \frac{\text{RM1.80}}{26.19 \text{ cm}^2}$$

$$\approx \text{RM0.07/cm}^2$$

Pizza dari kedai B adalah lebih berbaloi sebab harga 1 cm² pizza lebih murah daripada 1 cm² pizza dari kedai A.

Pizza from shop B is more worth it because its price of 1 cm² of pizza is cheaper than 1 cm² of pizza from shop A.

(d) Harga pakej yang dijual di Syarikat X

Price of the package sold by Company X

$$= (\text{RM}500 \times 6) + 0.9(\text{RM}800) + 0.98[(\text{RM}500 \times 6) + 0.9(\text{RM}800)]$$

$$= \text{RM}3 \text{ 720} + \text{RM}3 \text{ 645.60}$$

$$= \text{RM}7 \text{ 365.60}$$

Harga pakej yang dijual di Syarikat Y

Price of the package sold by Company Y

$$[(\text{RM}520 \times 6) + \text{RM}300 + 0.75(\text{RM}420) + \text{RM}20] \times 2$$

$$= \text{RM}7 \text{ 510.00}$$

Puan Linda dan suaminya sepatutnya memilih Syarikat X memandangkan harga pakejnya, RM7 365.60 adalah lebih berbaloi daripada pakej yang ditawarkan oleh Syarikat Y dengan harga RM7 510.

Puan Linda and her husband should choose Company X since the price of package, RM7 365.60 is more worth if compared to the package offered by Company Y with the price of RM7 510.